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ABSTRACT

Bias towards women exists in the selection of applicants to professional and other positions. This research investigated the effects of two rater variables--sex and attitude toward women--and three applicant variables--sex, field (engineering-dietetics), and attributes--(feminine-masculine) upon ratings of competency and personal charm. Analyses yielded different significant effects for the two dependent variables. For competency, significant four-way (subject x feminism x field x attribute) and three-way (subject sex x feminism x applicant sex) interactions were found. For personal charm, a significant three-way (subject sex x applicant sex x field) interaction was found. Results indicate evaluations of applicants are a complex function of the sex and feminist attitudes of the raters as well as the sex, masculine or feminine attributes of the applicant, and gender appropriateness of the chosen field that may vary as a function of the criterion for evaluation. (Author)

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Role Appropriateness of Educational Fields: Bias in Selection

By

Elizabeth P. Smith

Susan E. Bukacek

Claire S. Parker

Sandra J. Phifer

Barbara S. Plake

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Role Appropriateness of Educational Fields:

Bias in Selection

(An Abstract)

Bias towards women exists in the selection of applicants to professional and other positions. This research investigated the effects of two rater variables, sex and attitude toward women, and three applicant variables, sex, field (engineering-dietetics), and attributes (feminine-masculine) upon ratings of competency and personal charm. Analyses yielded different significant effects for the two dependent variables. For competency, significant four-way (subject x feminism x field x attribute) and three-way (subject sex x feminism x applicant sex) interactions were found. For personal charm, a significant three-way (subject sex x applicant sex x field) interaction was found. Results indicate evaluations of applicants are a complex function of the sex and feminist attitudes of the raters as well as the sex, masculine or feminine attributes of the applicant and gender appropriateness of the chosen field, that may vary as a function of the criterion for evaluation.

Role Appropriateness of Educational Fields:

Bias in Selection

Although evidence regarding the nature, extent, and origin of sex-related differences in abilities or psychological characteristics is inconclusive, there appears to be strong confirmation of the fact that men and women are evaluated differently in terms of their achievements, abilities and behaviors (Deaux & Taynor, 1973; Goldberg, 1968; Gray-Shellberg, Stone, & Villareal, 1972; Horner, 1969; Pheterson, Kiesler, & Goldberg, 1971). Generally, it is found that within formal organizations, males continue to dominate and that bias exists in both selection and treatment of females. When identically qualified men and women have been evaluated in hiring decisions, bias against women has been demonstrated in technical and managerial positions (Dipboye, Fromkin, & Wiback, 1975; Rosen & Jardee, 1974), educational and research positions (Fidell, 1970) and for positions in science and engineering (Shaw, 1972).

It would be noted that a few studies have shown no bias in favor of men (e.g., Levenson, Burford, Bonno, and Davis, 1975) and even bias in favor of women (Bigoness, 1976; Jacobson & Effertz, 1974; Taynor & Deaux, 1973), but these few studies do little to dispute the strong evidence in research studies and day to day observations that men fare better than women.

Riger and Galligan (1980) reported that much of the research into the low status of women in managerial positions has been approached from the person-centered perspective, focussing on variables internal to the individual, while other research has employed the situation-centered perspective, focussing on selectional factors involved in hiring practices or the work environments. In regard to personal characteristics, traditionally masculine attributes such as ambition, decisiveness, logicalness, and rationality are considered essential for work success (e.g., Riger & Galligan, 1980). Independent of gender, a

masculine sex-role orientation elicits higher ratings of performance (e.g. Bernard, 1979). In regard to situational factors, evaluation bias may be a function of the type of work involved (Cline, Holmes & Wermer, 1977), the demands of the job (Rosen & Jardee, 1974), and whether the career area is seen as gender appropriate (Mischel, 1974). Preference is for males in traditionally male fields and for females in traditionally female fields, with incongruence between applicant sex and gender appropriateness of the field being tolerated only when the applicant is over-qualified (Cohen & Bunker, 1975). Thus in positions perceived as requiring typically male sex-role characteristics, research demonstrates having equal qualification in abilities is not enough; women need to have greater achievements than men to be accepted.

Given the prevalence of sex bias against women, it appears that further investigation into relationships between factors that contribute to such bias is needed. Some research has attempted to examine variables pertaining to women that effect instances of bias against them; other research has looked at factors pertaining to persons making selection decisions. The research presented here makes an important step by considering aspects of both person-centered and situation-centered approaches to the analysis of sex bias favoring males. It approaches the selection situation or process by examining factors internal to the applicant, sex and attributes of sex-role characteristics, and external to the applicant, the sex and attitude toward women of the evaluators and the traditionally ascribed sex dominance of the field to which the candidate applied. The purpose of the study was to answer the following questions: Do men and women hold biases concerning the entrance of men and women into fields which have traditionally been classified as masculine and feminine fields? If and when these biases exist, are they influenced by the described masculine or feminine personality traits of the applicant, or are they influenced by the rater's personal feelings concerning role appropriate behaviors?

Methodology

Subjects. The subject population consisted of 518 undergraduate students who attended a large midwestern university. Participation was on a voluntary basis, providing an opportunity for students to partially fulfill course requirements. Initially, 892 students were administered the first scale with a final useable sample of 518 who completed both parts of the study. This attrition rate can be attributed to inability to match data from the first and second administrations of materials. The approximate mean age of the subjects was 20 years. Gender representation was 315 (61%) females and 203 (39%) males. The pool was drawn from colleges campuswide with the following areas represented: education (51%), business (17%), and other (32%). Educational levels were evenly distributed.

Instruments. Two sets of instruments were used in this study. The first was an Attitude Survey composed of the 35 item Bias in Attitudes Survey (BIAS) (Jean & Reynolds, 1980) and 35 items from the College Self-Expression Scale (Galassi, De Lo, Galassi, & Gastein, 1974). Only the BIAS items were analyzed for this study, with the other items serving to distract respondents from the intent of the survey.

The Bias in Attitudes Survey (Jean & Reynolds, 1980) focuses on interpersonal and social issues of both men's and women's roles in society; for example: "A women needs the support of a man to advance professionally;" "A real man is one who can take responsibility for his wife and family", and "Biology determines ones destiny." Items were scored on a five point Likert scale of Strongly Agree, Agree, Neutral, Disagree and Strongly Disagree. Using a median split procedure, subjects were categorized as either being profeminist (more liberal views on sex-role behaviors) or as anti-feminist (traditional views on sex-roles of males and females). The coefficient alpha reliability for the BIAS was .90.

A second set of instruments was administered to all subjects later in the semester. Each subject received a packet of materials including a letter of recommendation, a personal application form providing information on honors, grades and achievements, memberships in academic organizations, and relevant work experiences of the applicant and a rating form. Eight application packets forming eight conditions were used in all. The following variables were manipulated to form the eight conditions: the applicant was either male or female, applying for either an engineering (masculine field) or a dietetics (feminine field) program, and described as having masculine (e.g., self-confident, logical, objective) or feminine (friendly, conscientious, understanding) characteristics.

After reading the application materials, the subjects were asked to evaluate the applicant on a two-part Likert rating scale. The first part was intended to measure various estimates of academic and personal worth, competency and success; four items were added as a manipulation check for the masculine-feminine attribute variable. The second part was designed to measure the attribution of success to luck or effort. The present paper deals with the results obtained on only the first part. Those obtained on the second part are reported elsewhere (Powers-Alexander, Lambert & Galvin, 1982). An attempt to integrate the results over the whole study is reported by Major & Plake (1982).

Prior to analysis, the rating scale was factor analyzed. From the 15 items on the first part, three factors emerged. "General rating of the applicant" appeared as a single item factor; subsequent analysis did not yield significant results and this factor was eliminated from further investigation. The other two factors appeared to be measures of competency and charm or "niceness". The 9 item competency variable included the two masculine qualities, logicalness and assertiveness. The 3 item charm variable included the two feminine items sensitivity to others and helpful plus likeability.

Design. Separate 2x2x2x2x2 ANOVA designs analyzed the effects of pro/anti-feminist attitudes, sex of subject, sex of referent, sex of field, and sex of attributes on competency and charm as dependent measures.

Results

The results of the analyses were quite complex, especially for the competency variable, involving three and four-way interactions. Further, different independent variables appear to impact the evaluation of applicants in regard to competency and charm. Although interpretation of results often-times proceeds from the most complex to the simplest effects, the results are discussed in reverse order to make comprehension of the complex results easier.

Competency. For the competency variable, significant main effects for sex of rater and sex of attributes were found. Females rated applicants significantly higher than did males ($F(1,484) = 13.94, p < .001$). Applicants with masculine attributes were rated significantly higher than those with feminine attributes ($F(1,484) = 27.37, p < .001$).

A significant two-way interaction between sex of rater and sex of referent or applicant ($F(1,484) = 5.587, p < .05$) was found. Males rated a male applicant significantly lower than females did ($\bar{X}_{MM} = 3.60, \bar{X}_{FM} = 3.84, t = 5.02, p < .001$) but the ratings of men and women raters of the female applicant were not significantly different. As indicated in Figure 1, the graph of the interaction, raters demonstrated a trend toward preference of applicants of the opposite sex.

The two-way interaction of sex of rater X sex of applicant was imbedded in the only significant three-way interaction, and included feminism level ($F(1,484) = 3.91, p < .05$). This interaction is shown in Figure 2. Followup comparisons were made between the male and female groups. When the applicant was male, significant differences were found between the ratings of antifeminist males and females ($\bar{X}_{AM} = 3.58, \bar{X}_{AF} = 3.88, t = -4.53, p < .001$) as well as for the

profeminists ($\bar{X}_{PM} = 3.56$, $\bar{X}_{PF} = 3.82$, $t = -2.25$, $p < .05$). The differences were not significant for ratings of the female applicant. The three-way interaction indicated that, when feminism level is considered, the preference for applicants of the opposite sex disappears for profeminists but is observed in the anti-feminists.

A significant four-way interaction involving sex of rater, feminism level, sex of field and sex of attributes ($F(1,484) = 4.65$, $p < .05$) was found for the competency variable. This interaction is pictured in Figure 3. Cell means and standard deviations are presented in Table 1. For ease of interpretation, sex of field (dietetics and engineering) and sex of attribute (masculine-feminine) were grouped according to match non match conditions in order to examine differences between males and females on the basis of their feminist (pro-anti) attitudes. Under the masculine match condition of engineering applicants with masculine attributes, a significant difference was found between the mean ratings for antifeminist males and females ($\bar{X}_{AM} = 3.69$, $\bar{X}_{AF} = 36.87$, $t = -2.01$, $p < .05$). Although profeminist females rated applicants higher than did profeminist males, this difference was not significant.

Under the matched condition of a dietetics applicant with feminine attributes, a disordinal interaction was observed in which the mean rating for antifeminist males exceeded that of the profeminist males, while the reverse was true for anti- and profeminist females. No significant differences were found between male and female profeminists or between male and female antifeminists.

A very different disordinal interaction emerged under the condition in which an applicant to engineering had feminine attributes. Male and female antifeminists rated the applicant significantly differently, ($\bar{X}_{AM} = 3.56$, $\bar{X}_{AF} = 3.79$, $t = -2.29$, $p < .05$). On the other hand, the means for male and female profeminists were only minutely different. This was the only condition under which the mean for antifeminist females exceeded that of the profeminist females.

For mismatch condition of dietetics applicant with masculine attributes, the results followed the same pattern as was found in the engineering applicant with masculine attributes condition. Mean ratings between antifeminists males and females were significantly different ($\bar{X}_{AM} = 3.67$, $\bar{X}_{AF} = 3.91$, $t = -2.66$, $p < .01$). Profeminist females rated applicants higher than did the profeminist males, but the difference was not significant.

Charm. The statements that formed this dependent variable were similar to the characteristics used in the letters of recommendation to create the feminine attributes condition. As might be expected then, a main effect for sex of attribute was found ($F(1,484) = 172.47$, $p < .0001$), with applicants with feminine descriptors being rated higher on the charm characteristics than those with masculine descriptors.

There was also a significant two-way interaction involving sex of applicant and sex of attribute ($F(1,474) = 5.42$, $p < .05$), pictured in Figure 4. No significant differences were observed between ratings of male and female applicants, but slight preference was observed for the male with feminine attributes and the female with masculine attributes.

The analysis yielded a significant three-way interaction of sex of rater by sex of applicant by sex of field ($F(1,484) = 10.04$, $p < .01$) seen in Figure 5. Means and standard deviations for the threeway interaction are presented in Table 2. To follow up the interaction, comparisons were made between male and female subjects' ratings of the two applicants in the two fields. In evaluation of the male applicant, no significant difference was found for either field. In considering the female applicant, no significant difference was found when she was applying to dietetics. When the female was applying to engineering, however, the difference was significant ($\bar{X}_M = 3.53$, $\bar{X}_F = 3.91$, $t = 3.35$, $p < .001$), with females rating her higher in personal charm.

Discussion

The results were very different when the subjects rated personal charm characteristics than when they rated competency or success. More of the independent variables combined to influence subjects' ratings of applicant competency. When competency was assessed, the individual was not considered to be more or less successful or competent on the basis of sex alone; that is, a definitive bias against women was not observed in general. The responses of antifeminist women raters, however, did show preference for a male applicant, but, surprisingly, the responses of antifeminist men suggested a preference for a female applicant. No sex preference was discernible for profeminist subjects.

Apparently, at least to these raters, the sex of the applicant was not as important as the sex role of the attributes used to describe the individual. Regardless of applicant's sex and the gender appropriateness ascribed to the field, and the sex and attitude toward women of the person doing the rating, an applicant's having masculine characteristics led to his/her receiving higher evaluations than if feminine descriptors applied. This finding is consistent with the idea that development of attributes considered to be masculine, such as assertiveness, is important for women who wish to advance in a career (e.g., Kaye & Scheele, 1975). Unfortunately, doing so can place women in a double-bind, however, in which they must develop such skills or traits to be acknowledged as qualified and competent, but are then remonstrated for being "unfeminine." Frequently, what is seen as assertiveness in men is considered aggressive in females and what is considered "forceful" in a man may be seen as "hostile" in a woman (e.g., Hail & Sandler, 1982).

This study has demonstrated that in the selection process, evaluation of individuals is influenced to varying degrees by factors that pertain to both the applicant and the person doing the rating. Since subjects were university students, there appears to be a need to replicate the study with subjects who

are actually involved in selection processes. This study does carry messages to people who find themselves in either of the roles in the selection process. Those involved in reviewing, selecting or hiring people need to examine their own attitudes and be aware of the possibility of biases within themselves. The study results, especially noting that women afforded applicants much higher ratings than did men, suggests that hiring and selection procedures may be more equitable if objective measures or rating systems are employed, particularly in environments where a number of people may be involved in hiring or selection.

Although people who select, hire and promote people can be urged to be more objective, individuals applying for entrance into various educational, training, or career positions are still faced with possibilities of bias for or against them, particularly if they chose to enter gender-crossed fields. The study points out clearly that any applicant needs to be aware of the impact upon his/her evaluation of the traits or characteristics self-ascribed or ascribed by others.

When a person was described as having feminine characteristics, the responses of the subjects were difficult to interpret. When the field was engineering, profeminist females, but not males, seemed to consider such attributes as interfering with expected success in this area, but males and antifeminist females did not. Oddly, male profeminists viewed applicants with feminine attributes as less competent and able to succeed in the feminine field of dietetics (matched attributes-field) although feminist females appeared to see this as a positive combination of field and traits. These findings serve to point out that although males and females may adhere to or acknowledge similar positive attitudes toward women, they may behave differently from one another, at least in evaluation and selection of applicants to certain fields.

In looking at the charm variable, it is obvious that the female applicant was not rated higher on the personal charm characteristics generally considered

as "feminine" simply because she was a woman. How well a person was liked, disregarding ability or competence, was influenced by whether he/she was entering a traditionally masculine or traditionally feminine field, as well as the sex of the person who was doing the evaluating. Males tended to rate a female as more likable, helpful and friendly as long as she was in a feminine field, suggesting a tendency to dislike her "stepping out of bounds". The males' rating of Linda in engineering was extremely low compared to all other conditions. Females seemed to prefer the person who crossed over to the gender inappropriate field: Richard in dietetics and Linda in engineering.

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Table 1
Means, Standard Deviations and Cell Sizes
for the 4-way Interaction for Competency

Field	Attribute	Sex of Rater	Feminist Attitude	Mean	SD	n
Engineering	Masculine	Males	Anti	3.69	.28	42
			Pro	3.77	.32	12
		Females	Anti	3.87	.32	30
			Pro	3.96	.39	48
	Feminine	Males	Anti	3.56	.43	29
			Pro	3.64	.30	25
		Females	Anti	3.79	.38	27
			Pro	3.63	.32	50
Dietetics	Masculine	Males	Anti	3.67	.46	35
			Pro	3.77	.16	9
		Females	Anti	3.91	.45	34
			Pro	3.92	.29	50
	Feminine	Males	Anti	3.67	.44	33
			Pro	3.58	.38	18
		Females	Anti	3.58	.46	31
			Pro	3.76	.43	44

Table 2
Means, Standard Deviations and Cell Sizes
for the 3-way Interaction for Charm

Field	Sex of Rater	Sex of Applicant	Mean	SD	n
Engineering	Male	Male	3.85	.69	57
		Female	3.53	.78	51
	Female	Male	3.71	.75	74
		Female	3.91	.66	80
Dietetics	Male	Male	3.78	.76	43
		Female	3.83	.62	52
	Female	Male	3.84	.70	84
		Female	3.68	.43	75

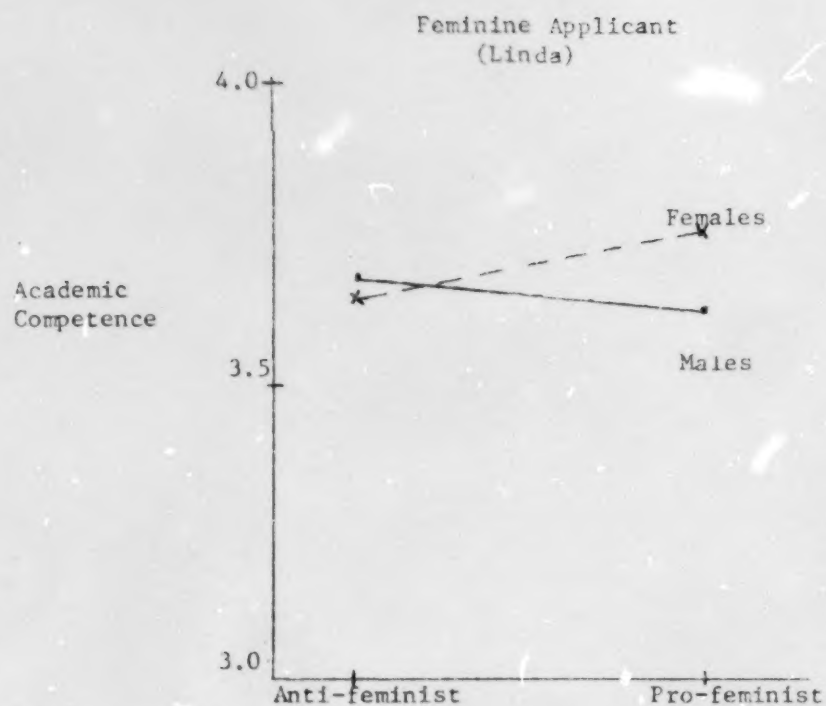
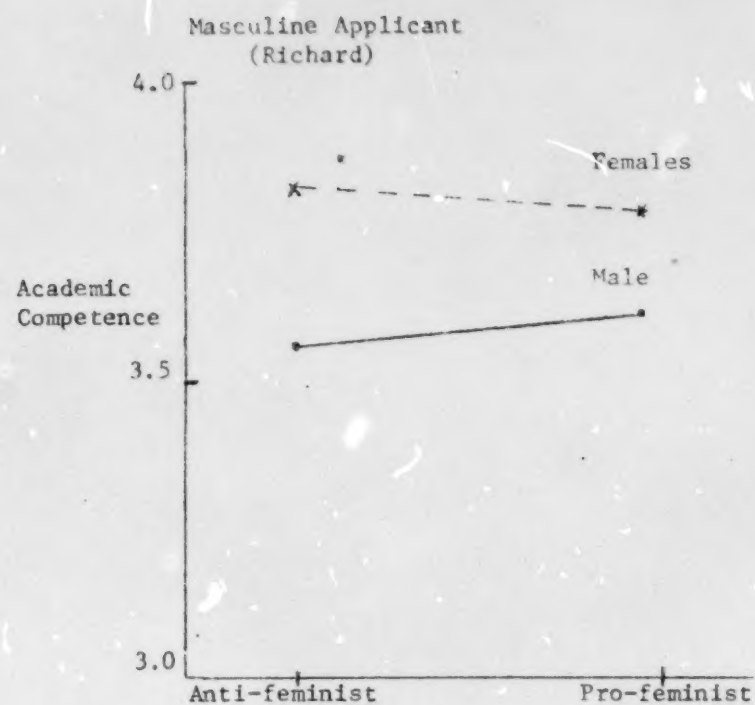


Figure 2. Sex of Rater X Rater's Pro/Anti-feminism X Sex of Applicant

CHARM

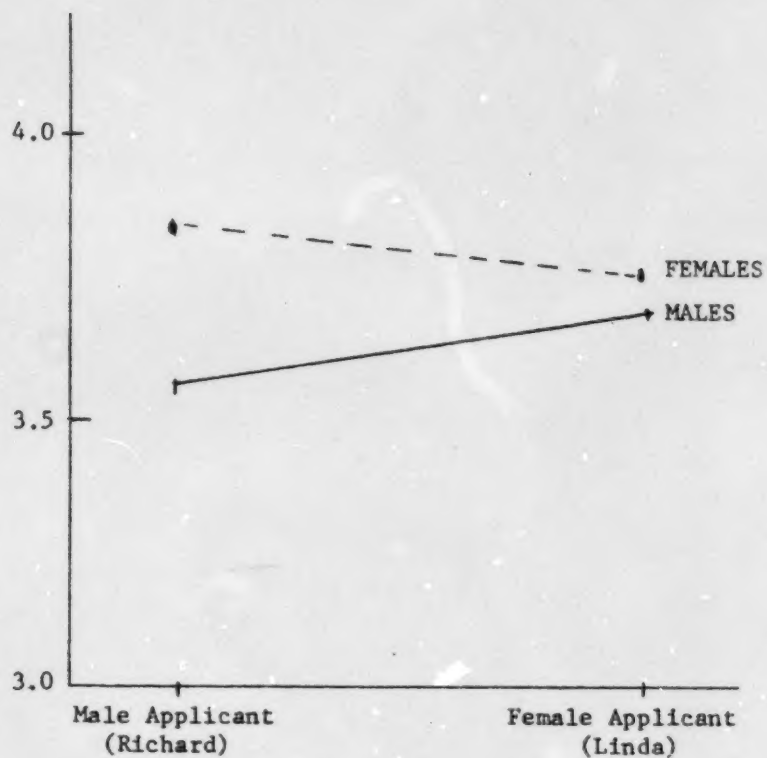
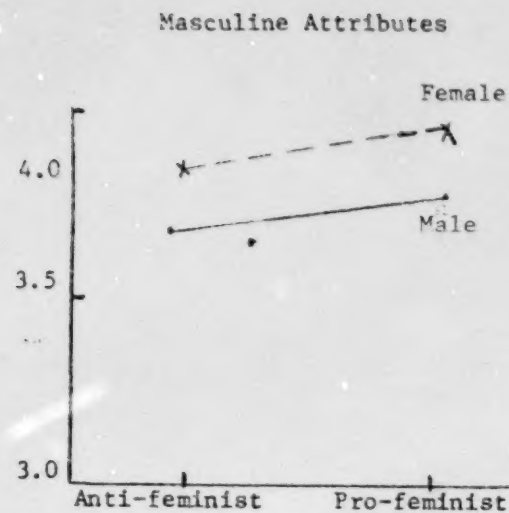


Figure 1. Sex of Rater X Sex of Applicant



Masculine Field
(Engineering)

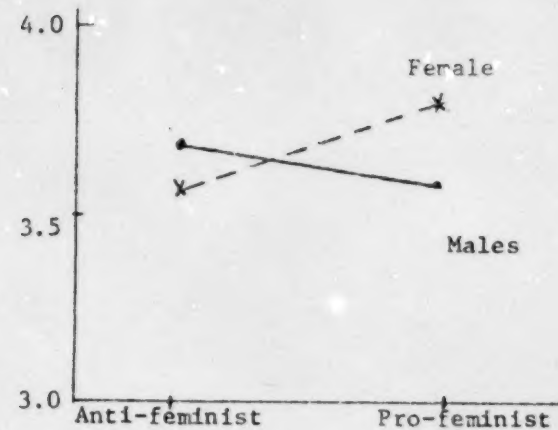
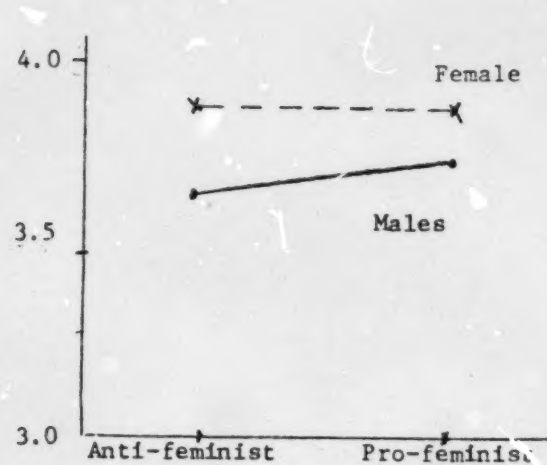
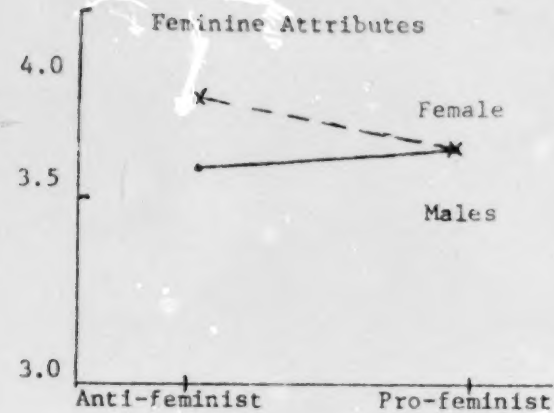


Figure 3. Sex of Rater X Rater's Pro/Anti-feminism X Sex of Attributes X Sex of Field

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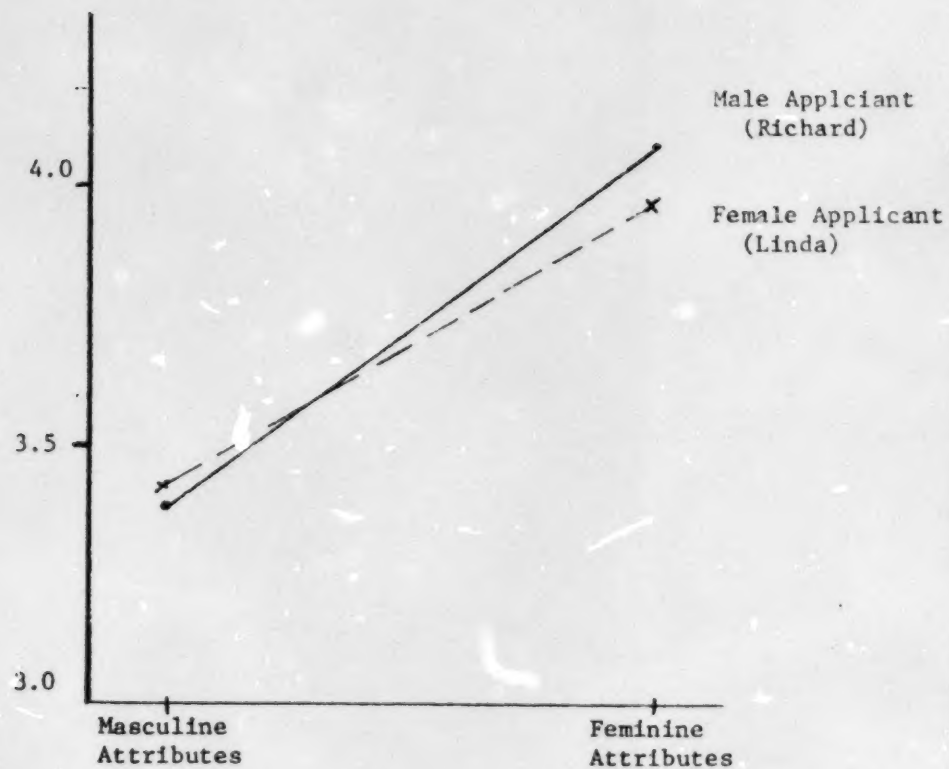


Figure 4. Sex of Attributes X Sex of Applicant

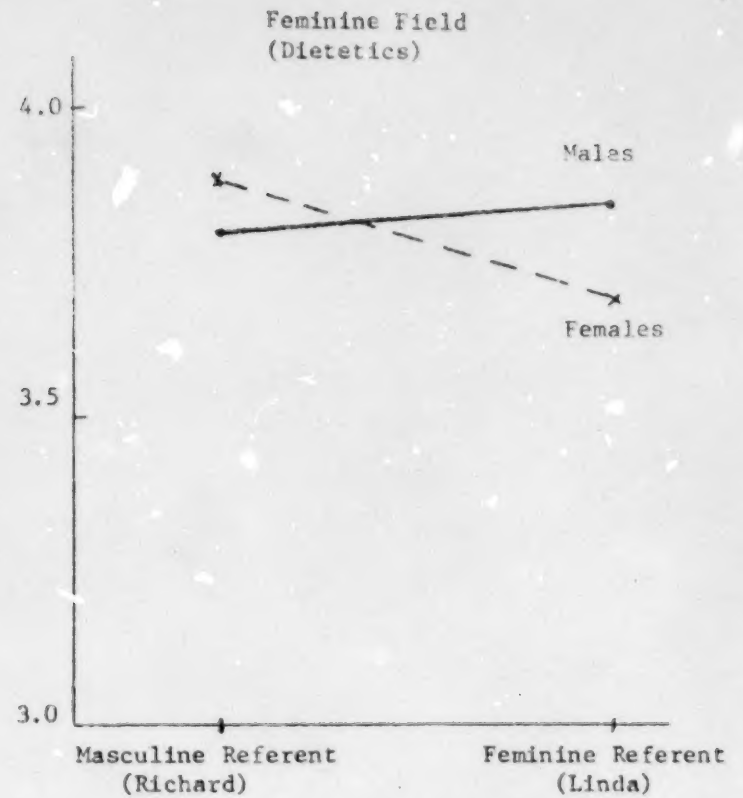
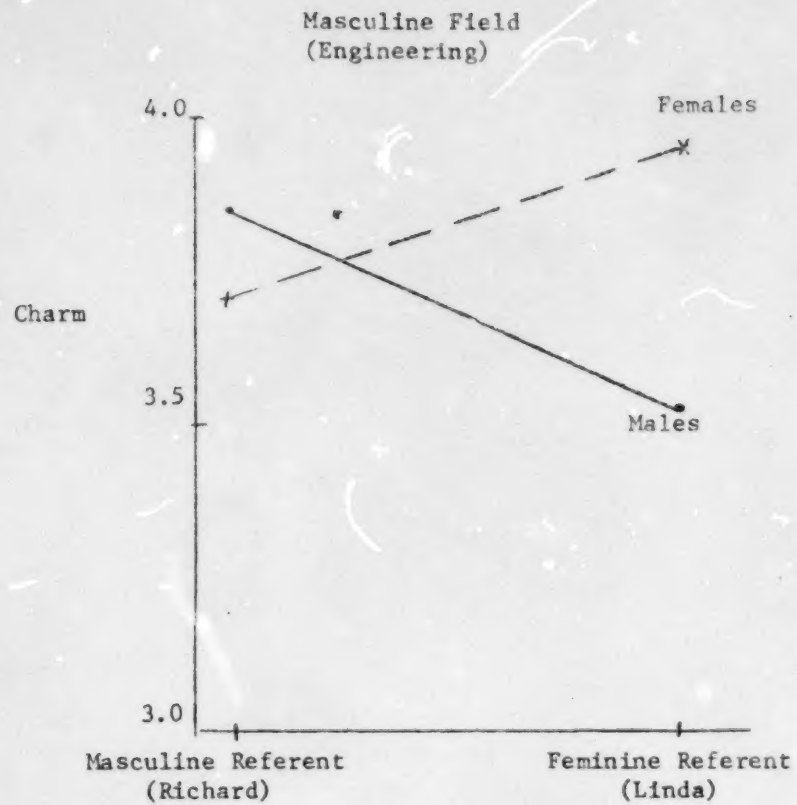


Figure 5. Sex of Rater X Sex of Referent X Sex of Field